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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/075,087	02/11/2002	Danilo Pau	851763.415	7273

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EXAMINER	
REKSTAD, ERICK J	
ART UNIT	**PAPER NUMBER**
2621	

DATE MAILED: 10/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/075,087	Applicant(s) PAU ET AL.	
	Examiner Erick Rekstad	Art Unit 2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9,11-18,20-23,25-32,34-37 and 39-43* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9, 11-18, 20-23, 25-32, 34-37, 39-43* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This is a Second Non-Final Rejection for application no. 10/075,087 in response to the amendment filed on May 22, 2006 wherein claims 1-9, 11-18, 20-23, 25-32, 34-37, 39-43 are presented for examination.

Allowable Subject Matter

The indicated allowability of previous claim 44 is withdrawn in further view of the Yim reference. Rejections based on the cited reference(s) follow.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 3, 4, 6-9, 11-15, 17, 18, 20-23, 25-29, 31, 32, and 34-37, 39-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5,926,573 to Kim et al. in view of US Patent 6,445,828 to Yim.

[claim 1]

As shown in Figure 1, Kim teaches of distinguishing, in said MPEG input bitstream, first portions that substantially do not affect and second portions that substantially do affect variation of the resolution of the MPEG output bitstream (Note: Figure 1 shows the bitstream being broken into header information (non-affecting) and DCT coefficients (affecting portion), Col 5, Lines 16-33), subjecting said second portions of the MPEG input bitstream to a function of modification of the resolution

obtained by filtering said second portions in a discrete cosine transform domain (Figure 1 (Reference Number 120)., and transferring said second portions to said output bitstream (Note: Figure 1 shows the filtered DCT coefficients being transferred to the OBS (i.e. output bitstream). Kim does not teach of subjecting said second portions of the input bitstream to an inverse-quantization operation and to a motion compensation operation.

Yim teaches a process for generating an MPEG-2 output bitstream from an MPEG-2 input bitstream having a first resolution, said MPEG-2 output bitstream having a second resolution modified with respect to the first resolution of said MPEG-2 input bitstream (Abstract, Col 4 Lines 62-65, Fig. 2). As shown in Figure 2, the stream is subjected to an inverse-quantization operation (216), a motion compensation operation (220) and a filtering operation (206) (Col 6 Lines 37-65, Col 7 Lines 27-44, Fig. 2). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the process of Kim with the process of Yim in order to provided a means to filter MPEG-2 bitstreams as taught by Yim.

Yim further teaches the subjecting said motion-compensated second portions to a first operation of modification of the resolution by filtering said motion-compensated second portions in a discrete cosine transform domain to obtain resolution-modified second portions in the second resolution, wherein said filtering operation in the domain of the discrete cosine transform includes the operations of:

Storing a given number of macroblocks aligned on one and the same line (Col 7 Lines 60-63, Col 10 Lines 58-61, Figs. 5 and 6). Note, the citation teaches the storage of the frame which contains macroblocks in a line.

Multiplying said macroblocks by at least one matrix with a scaled factor of definition, wherein the multiplying operation comprises:

Multiplying a first subset of macroblocks of said given number of macroblocks by a first matrix (TF^v) with a factor of definition that is reduced in a first direction (vertical) to obtain a first macroblock having the factor of definition that is reduced in the first direction (Col 10 Lines 17-30).

Multiplying a second subset of macroblocks of said given number of macroblocks by a second matrix (Tf^v) with the factor of definition that is reduced in the first direction to obtain a second macroblock having the factor of definition that is reduced in the first direction (Col 10 Lines 17-30). Note, the citation teaches the vertical downscaling for field and frame based blocks.

Multiplying the first and second macroblocks by a third matrix with a factor of definition that is reduced in a second direction to obtain a third macroblock (Col 10 Lines 32-65). Note, that the horizontal downscaling matrix is the same for both field and frame blocks. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the matrices of Yim with the blocks of Kim in order to scale them as taught by Yim.

[15, 20 and 29]

As shown above, Kim and Yim teach the process of claim 1. Kim further teaches a sorting module (VLD) which provides to header controllers the first portion (headers) that substantially do not affect and second portions (DCTs) that substantially do affect variation of resolution of the MPEG output bitstream (Col 5 Lines 1-32, Fig. 1). Kim does not teach the use of a computer program.

As shown in Figure 2, Yim teaches obtaining the DCTs from the VLC(214) by an inverse quantizer(216) and then presenting the inverse-quantized DCTs to a motion compensation module(220). Figure 2, further shows a processing module(206) which modifies the resolution of the motion-compensated DCTs. In regards to claim 29, Yim further teaches the use of programs to run on general purpose processors in order to perform the steps of Figure 2 (Col 16 Lines 5-22). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the use of computer programs as taught by Yim with the system of Kim and Yim in order to allow a general purpose processor to be used as taught by Yim.

Yim further teaches the subjecting said motion-compensated second portions to a first operation of modification of the resolution by filtering said motion-compensated second portions in a discrete cosine transform domain to obtain resolution-modified second portions in the second resolution, wherein said filtering operation in the domain of the discrete cosine transform includes the operations of:

Storing a given number of macroblocks aligned on one and the same line (Col 7 Lines 60-63, Col 10 Lines 58-61, Figs. 5 and 6). Note, the citation teaches the storage of the frame which contains macroblocks in a line.

Multiplying said macroblocks by at least one matrix with a scaled factor of definition, wherein the multiplying operation comprises:

Multiplying a first subset of macroblocks of said given number of macroblocks by a first matrix (TF^v) with a factor of definition that is reduced in a first direction (vertical) to obtain a first macroblock having the factor of definition that is reduced in the first direction (Col 10 Lines 17-30).

Multiplying a second subset of macroblocks of said given number of macroblocks by a second matrix (Tf^v) with the factor of definition that is reduced in the first direction to obtain a second macroblock having the factor of definition that is reduced in the first direction (Col 10 Lines 17-30). Note, the citation teaches the vertical downscaling for field and frame based blocks.

Multiplying the first and second macroblocks by a third matrix with a factor of definition that is reduced in a second direction to obtain a third macroblock (Col 10 Lines 32-65). Note, that the horizontal downscaling matrix is the same for both field and frame blocks. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the matrices of Yim with the blocks of Kim in order to scale them as taught by Yim.

[claims 3, 4, 17,18, 31 and 32]

Yim further teaches the use of matrices to scale the resolution wherein the different matrices produce a different scaling result (Col 11 Lines 39-50). Yim further teaches the use of a separate matrix for scaling in the horizontal direction and in the vertical direction (Col 10 Lines 17-55). Note that Yim further teaches different matrices

for field encoded DCTs and frame encoded DCTS (Col 10 Line 59-Col 11 Line 5). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the matrices of Yim with the process of Kim and Yim in order to vary the scaling and to allow for scaling of both field and frame encoded DCTs as taught by Yim.

[claims 6 and 34]

As shown in Figure 1, Kim teaches the Variable Length decoding of the bitstream (605, Fig. 1) in order to obtain the quantized DCT blocks (Col 5 Lines 16-32). Yim also teaches the use of a Variable Length Decoder (214, Fig. 2) to obtain the quantized DCT blocks (Col 6 Lines 37-41). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a Variable Length Decoder in order to obtain the quantized DCT blocks of an mpeg stream as taught by both Kim and Yim.

[claims 7, 21 and 35]

Kim teaches the output of the modified MPEG-2 stream (Col 11 Lines 21-25). Kim does not teach storing the modified stream. Yim teaches the use of a storage means (212, Fig. 2) to store the modified MPEG-2 stream (212, Fig. 2) (Col 4 Line 61-Col 5 Line 5, Col 7 Lines45-52). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the storage means of Yim with the process of Kim and Yim in order to store the modified stream as taught by Yim.

[claims 8, 9, 22, 23, 36 and 37]

Yim further teaches the ability to not only reduce an stream by a factor of two but to also upscale by a factor of two by simply changing the matrices used (Col 14 Lines

30-41, Col 15 Lines 49-67). Yim further teaches both the received stream and output stream are stored in the mass storage (202) (Col 4 Lines 62-65, Fig. 2). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a previously scaled down MPEG stream as input to the system of Kim and Yim in order to upscale the MPEG stream as taught by Yim as the streams are both stored in the same mass storage (Official Notice).

[claims 11-14, 25-28 and 39-42]

Kim teaches a filtering operation in the domain of the discrete cosine transform comprises the operations of: storing a given number of macroblocks aligned on one and the same line (Column 7, Lines 34-50). Note, Kim teaches the use of storing the image information for the width of an image where in the example given by Kim is 240 macroblocks. Kim does not explicitly teach of multiplying said macroblocks by at least one matrix with a scaled definition factor.

Yim teaches the use of a buffer to store DCT blocks until they are resized (Col 7 Lines 60-67). Yim teaches the use of matrices in order to scale the blocks in the horizontal and vertical direction (Col 10 Lines 10-64). Yim further teaches the horizontal and vertical directions can be scaled at different factors (Col 11 Lines 39-51). Yim also teaches the use of four macroblocks in order to perform a 1/3 scaling (Col 12 Lines 3-23, Fig. 7). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the matrices of Yim with the blocks of Kim in order to scale them as taught by Yim.

Claims 2, 16 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim and Yim as applied to claims 1, 15 and 29 above, and further in view of US Patent 6,590,938 to Azadegan et al.

[claims 2, 16, and 30]

As shown above, Kim and Yim teach the process, system and software of claims 1, 15 and 29. Kim and Yim both teach the partial decoding and re-encoding of the MPEG stream (Kim Figure 1, Yim Figure 2). Kim and Yim do not teach inverse discrete cosine transforming the modified resolution data.

Azadegan teaches a similar scaling means as Kim and Yim, but teaches the additional step of inverse discrete cosine transforming the stream in order to provide a standard definition tv signal to a display (Col 6 Lines 1-10, Col 15 Lines 52-60, Fig. 1B and Fig. 9A). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the decoding means of Azadegan with the means of Kim and Yim in order to provided a signal viewable on a display as taught by Azadegan.

Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kim and Yim as applied to claim 1 and further in view of US Patent 6,058,143 to Golin.

[claim 43]

As shown above, Kim and Yim teach the process of claim 1. Kim and Yim do not teach the applying to motion vectors associated with said input bitstream a transformation that correlates the motion vectors to a number of motion vectors associated with at least one of a plurality of macroblocks of said output bitstream,

wherein said transformation applied to the motion vectors associated with said input bitstream includes:

Multiplying said motion vectors by respective weighting factors;

Accumulating the results of the above multiplication; and

Dividing the results accumulated by the sum of said weighting factors.

Golin teaches the calculating of motion vectors is the most expensive part of the encoding process and therefore suggest the use of the motion information from the input to be used for generating motion vectors for the output of a transcoder (Abstract, Col 1 Lines 31-37 and Lines 60-65, Fig. 2). Golin further teaches obtaining the output motion vectors using a method as described above (Col 5 Lines 36-57). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the motion vector obtaining process of Golin with the process of Kim and Yim in order to reduce the cost of generating motion vectors as taught by Golin.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erick Rekstad whose telephone number is 571-272-7338. The examiner can normally be reached on 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on 571-272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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